⇒ ECONOMIC HEIGT OF THE DAM:

case (i) HT (less)

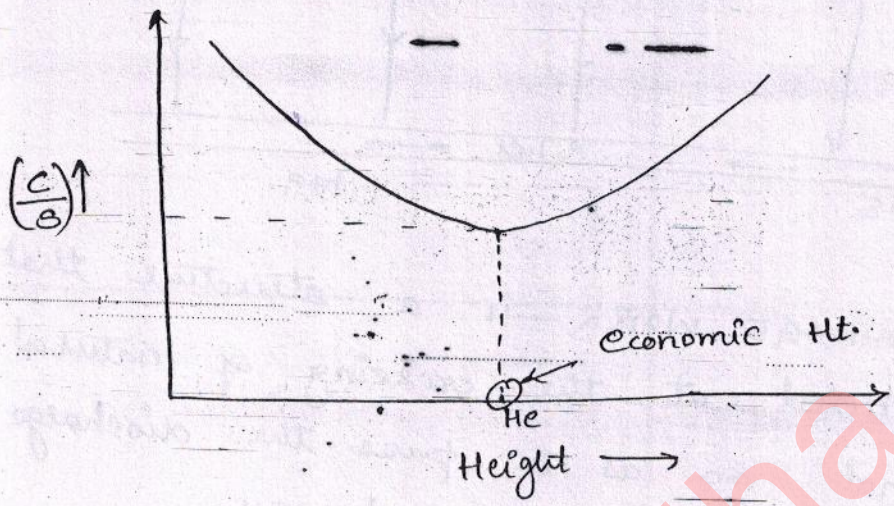
C↑ S↑ ⇔ H↑

$(\frac{C}{S})$↓

case (ii) HT (more)

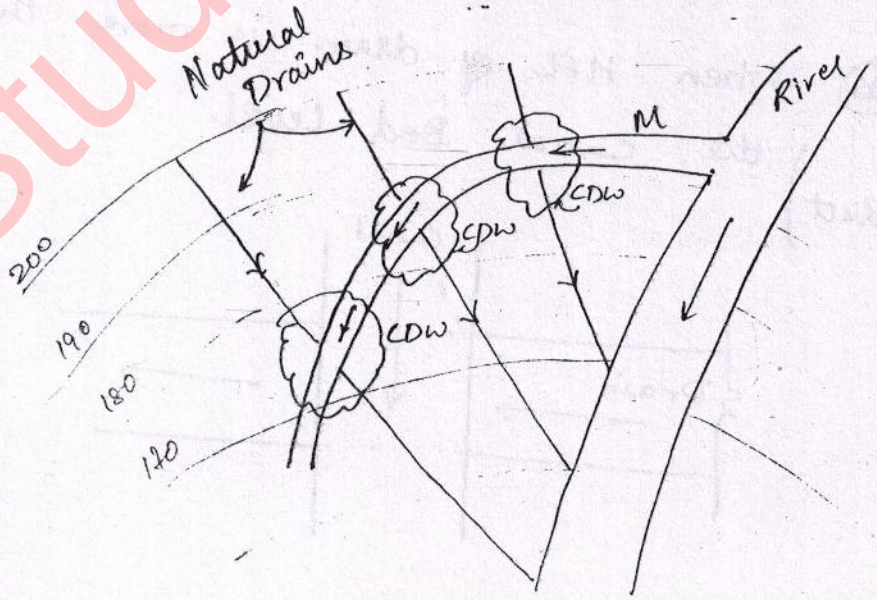
C↑ S↑ ⇔ H↑

$(\frac{C}{S})$↑.

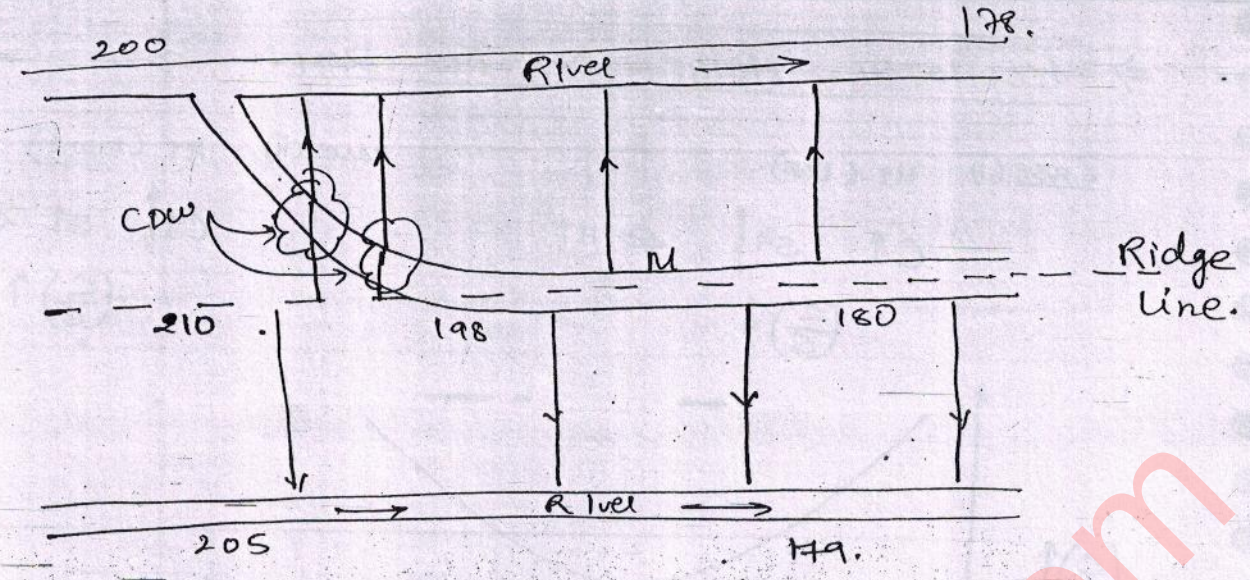


- With ↑ in Height of dam, construction cost ↑.
  But the storage capacity also ↑ with ↑ in height.
- from economic point of view, the ht. of the dam for which $\left(\frac{\text{cost}}{\text{storage}}\right)$ ratio is minimum is adopted. and is known as Economic Height of Do

⇒ CROSS DRAINAGE WORKS:



~~Cont~~ contour Canal



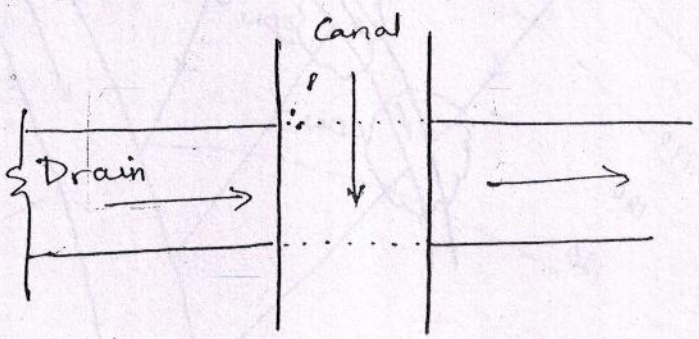
→ CROSS DRAINAGE WORK — is a structure that is constructed at the crossing of natural drain and canal so as to pass the discharge in the canal in uninterrupted way

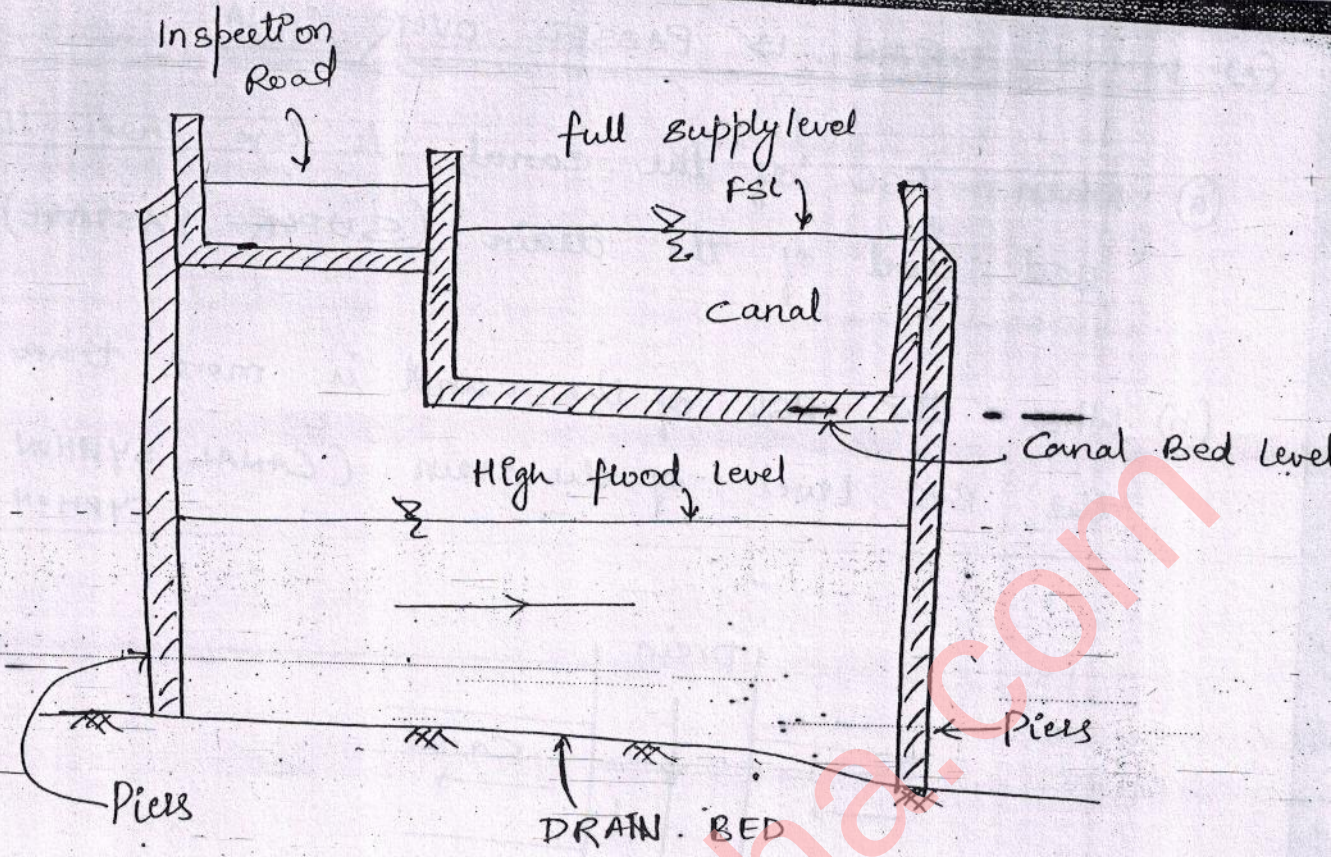
TYPES OF CROSS DRAINAGE WORKS

(1) When Canal is passed over the drain.

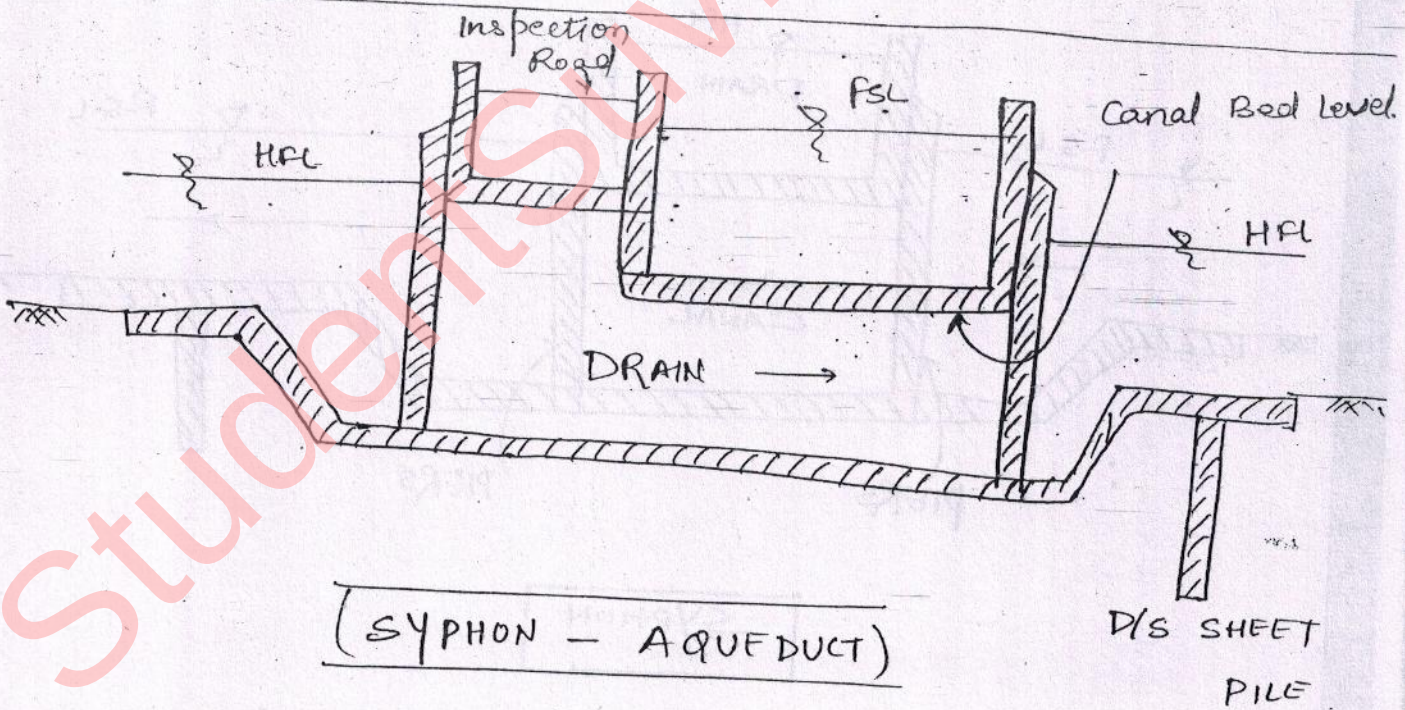
↳ (a) When High flood level (HFL) of the drain is the less the Bed level of Canal. (Aquaduct)

↳ (b) When HFL of drain is more than the canal Bed level. (SYPHON Aquaduct)





AQUADUCT

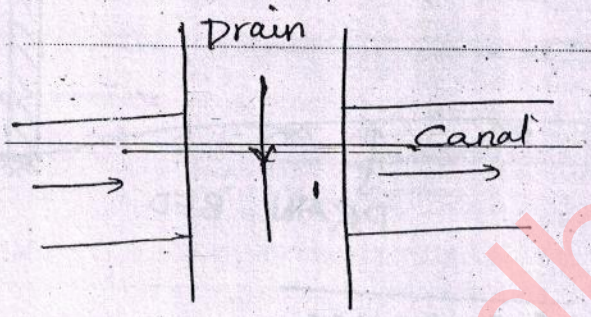


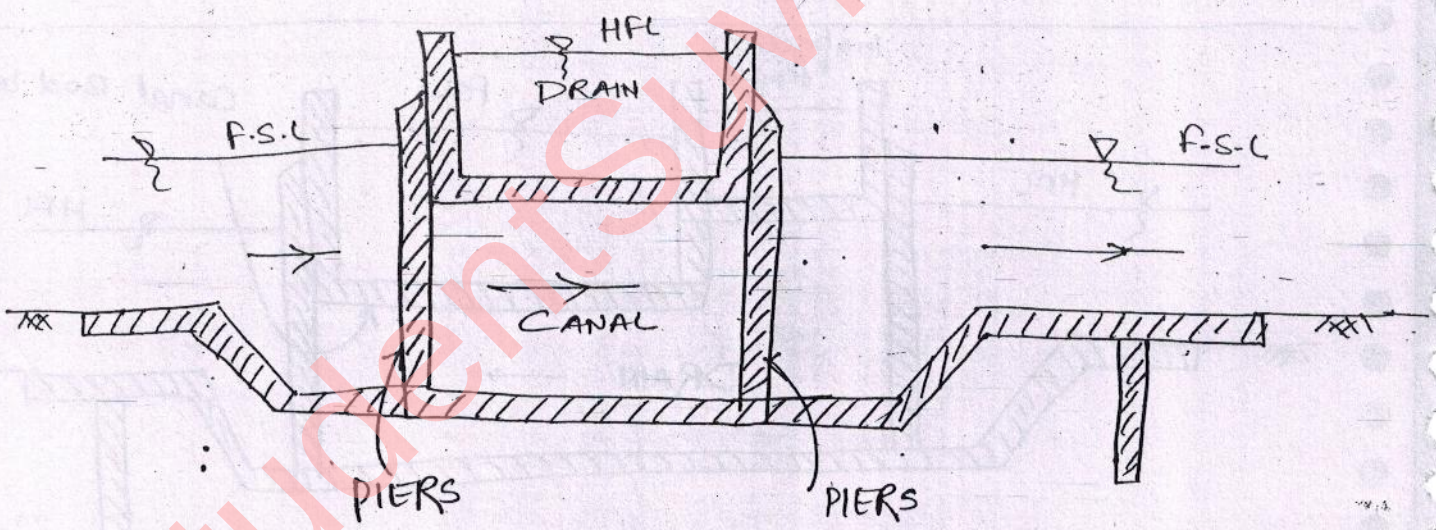
(SYPHON – AQUEDUCT)

(2) WHEN DRAIN IS PASSED OVER CANAL

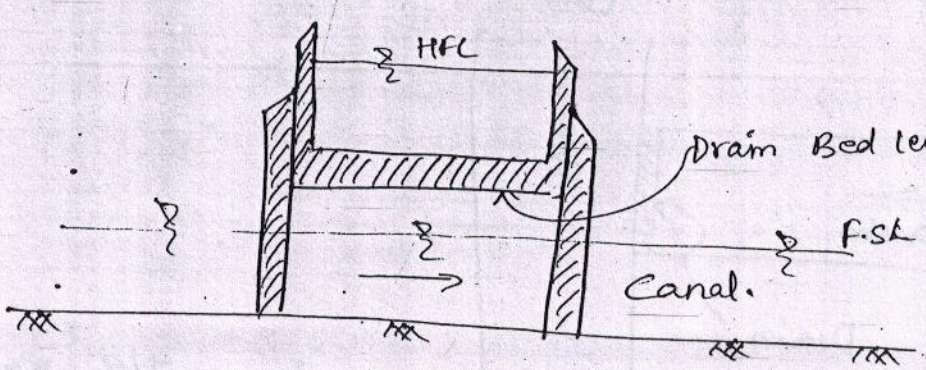
(a) When FSL of the canal is less than the Bed level of the drain (SUPER PASSAGE)

(b) When the FSL of the canal is more than the Bed level of the drain. (CANAL SYPHON or SYPHON)





SYPHON



SUPER PASSAGE

Eg:-

	depth	Bed level.
Canal	2	231
Drain	1.5	230

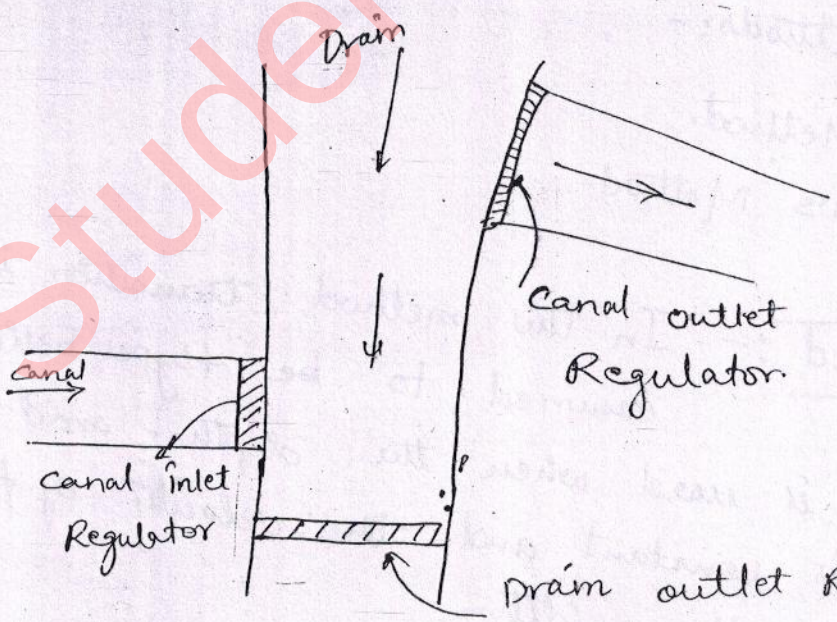
Ans. syphon eg aquaduct

(3) WHEN DRAIN & CANAL IS PASSED AT SAME LEVEL

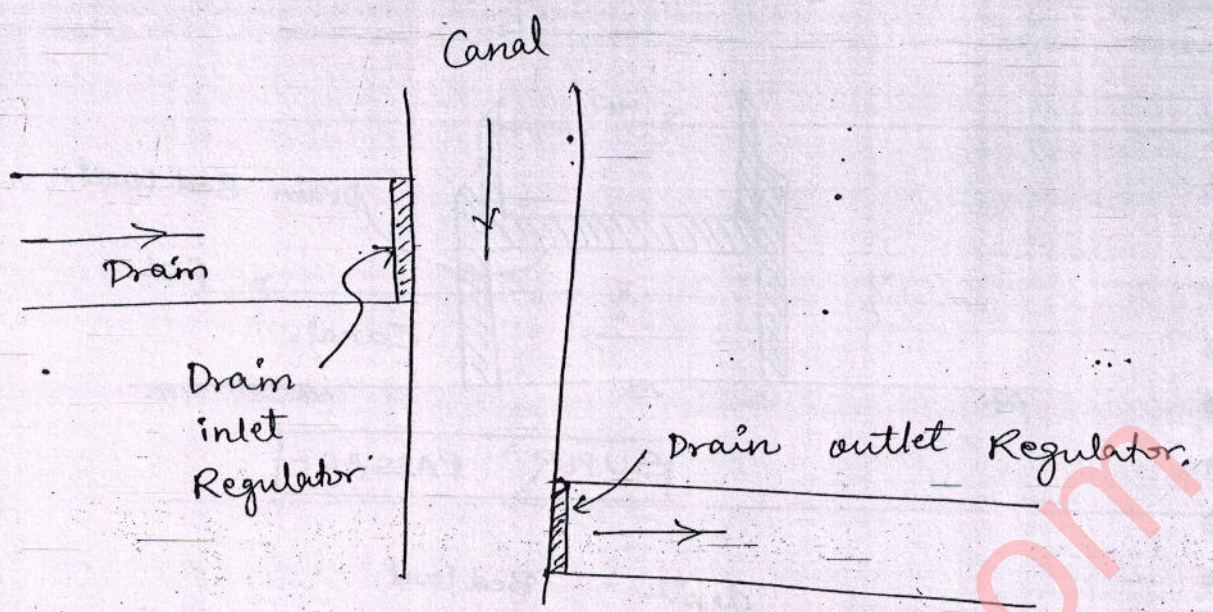
(a) LEVEL CROSSING

(b) Inlet & Outlet

- At Grade Structure → same level eg Rotary
- Grade Seperater Structure → diff levels eg: flyover



LEVEL CROSSING



INLET & OUTLET

DESIGN OF TRANSITIONS

- In case of large canals or drains, the width of the canal or drain is reduced at the section where cross drainage work is to be provided. This gradual reduction in width is known as Transition. which can be designed by any of following methods:-

(1) MITRA'S Method.
(2) CHATURVEDI'S Method.

MITRA'S Mtd :- In this method, transition is assumed to be hyperbolic.

- This method is used when the depth and discharge is constant and the velocity of flow varies with the width-